

**NEOSHO COUNTY COMMUNITY COLLEGE
MASTER COURSE SYLLABUS**

COURSE IDENTIFICATION

Course Code/Number: ETEC 110

Course Title: Residential Wiring

Division: Applied Science (AS) Liberal Arts (LA) Workforce Development (WD)
 Health Care (HC) Lifetime Learning (LL) Nursing Developmental

Credit Hour(s): Three (3)

Effective Date: Fall 2013

Assessment Goal Per Outcome: 70%

COURSE DESCRIPTION

This course covers electrical installation, operation, and maintenance for residential wiring. It will focus on general knowledge, safety, tools, print reading, equipment, wiring, and the National Electrical Code.

MINIMUM REQUIREMENTS/PREREQUISITES AND/OR COREQUISITES

None

TEXTS

The official list of textbooks and materials for this course is found on *myNeosho*.

<http://www.neosho.edu/ProspectiveStudents/Registration/CourseSyllabi.aspx>

GENERAL EDUCATION OUTCOMES

1. Practice Responsible Citizenship through:
 - identifying rights and responsibilities of citizenship,
 - identifying how human values and perceptions affect and are affected by social diversity,

- identifying and interpreting artistic expression.
2. Live a healthy lifestyle (physical, intellectual, social) through:
 - listing factors associated with a healthy lifestyle and lifetime fitness,
 - identifying the importance of lifetime learning,
 - demonstrating self-discipline, respect for others, and the ability to work collaboratively as a team.
 3. Communicate effectively through:
 - developing effective written communication skills,
 - developing effective oral communication and listening skills.
 4. Think analytically through:
 - utilizing quantitative information in problem solving,
 - utilizing the principles of systematic inquiry,
 - utilizing various information resources including technology for research and data collection.

COURSE OUTCOMES/COMPETENCIES (as Required)

Upon successful completion of this course, the student will be able to:

1. Recognize the basic electrical symbols used in electrical schematic diagrams and wiring plans.
2. Identify and learn to install switches, & receptacles.
3. Identify and learn to various types of protective devices, including fuses, circuit breakers, and ground fault circuit interrupters.
4. Identify and learn the different kinds & types of wire.

The following specific information will be covered.

Occupational Knowledge

1. Select areas of specialization in the commercial wiring profession.
2. List industries that employ commercial electricians.
3. Distinguish between the advantages and disadvantages of a commercial wiring occupation.
4. Name areas in which an electrician will be evaluated.
5. Define the requirements of licensing.

Reading Blueprints

1. Demonstrate the ability to read blueprints and schematic diagrams.
2. Identify National and Local Electrical codes and how they are used.
3. Identify electrical standards used in commercial wiring.

Basic Electricity

1. Demonstrate the ability to apply Ohm's Law to various electrical problems.
2. Demonstrate the ability to use math in wiring calculations.
3. Demonstrate the ability to use wiring standards in different installations

Use of Tools and Equipment

1. Identify types of equipment use in commercial wiring.
2. Identify and demonstrate use of measuring instruments.
3. Identify and demonstrate use of tools and equipment.

4. Demonstrate proficiency in bending conduit.
5. Match types of circuits with their characteristics and uses.
6. Classify standard box sizes with number of conductors which can be used.
7. Calculate withstand ratings.

Branch Circuits and Feeders

1. Demonstrate the ability to do calculations dealing with branch circuits.
2. Demonstrate the ability to determine conductor size and type.
3. Demonstrate the ability to calculate general lighting loads.
4. Demonstrate the ability to determine volt loss.
5. Demonstrate the ability to use proper installation procedures.
6. Identify raceway systems.

Switches and Receptacles

1. Identify receptacle types.
2. Identify switch types.
3. Demonstrate the ability to install receptacles and switches.

Lighting

1. Identify lighting terminology
2. Demonstrate the ability to install different types of lamps

Fuses and Circuit Breakers

1. Identify types of fuses
2. Identify types of breakers
3. Demonstrate the ability to test fuses
4. Calculate fuse and breaker size

Safety

1. Demonstrate the safe way to use tools and materials.
2. Identify safety rules when dealing with electrical materials and equipment

MINIMUM COURSE CONTENT

I. INTRODUCTORY BASICS

- A. Using the workbooks
- B. Reading Blueprints
- C. Outside reading's
- D. Lab times.
- E. Working drawings.

II. BASIC ELECTRICITY

- A. Application of Ohm's Law
- B. Effect of internal Resistance
- C. Wiring Calculations

III. CONDUCTORS

- A. Types of conductors
- B. Size
- C. Conductor Insulation

- D. Ampacity
- IV. METHODS OF CONDUIT WIRING
 - A. Types of Raceway Systems
 - 2. Methods of Installation
 - 3. Fishing conductors
- V. CALCULATING NUMBER OF CONDUCTORS IN CONDUIT
- VI. BRANCH CIRCUIT WIRING
 - 1. Calculating occupied floor area.
 - 2. Calculating minimum number of lighting circuits
 - 3. Branch circuit wiring methods
 - 4. Maximum ampacity check.
 - 5. Overcurrent protection and circuit rating
 - 6. Energy saving considerations.
- VII. SPECIAL PURPOSE OUTLETS
- VIII. SERVICE ENTRANCE EQUIPMENT
 - A. Electrical service
 - 2. Conductors
 - 3. Service distribution panel
 - 4. Grounding
 - 5. Types of transformers
 - 6. Safety in the workplace
- IX. SERVICE AND EQUIPMENT – COMMERCIAL
 - 1. Special requirements
 - 2. Higher voltages
 - 3. Three-phase panel boards
 - 4. Circuit protective devices
- X. SERVICE LOAD CALCULATIONS
- XI. STORE BUILDINGS

STUDENT REQUIREMENTS AND METHOD OF EVALUATION

INSTRUCTIONAL METHODS

- 1. Lecture and discussion will be used in presentation of concepts, information, and assignment requirements.
- 2. Demonstrations of assignments will be presented using commercial wiring equipment
- 3. Lab time will be provided for wiring assignments.

4. Outside assignments will consist of reading.
5. Illustrations will be presented on the chalkboard, overhead projector, audio-visuals and computer network.

STUDENT REQUIREMENTS

Students are expected to attend class and participate in class discussions, activities, and assignments. Points will be assigned to each project.

GRADING SCALE

Grades will be determined according to the following scale:

90% to 100% = A; 80 to 89 = B; 70 to 79% = C; 60% to 69% = D; 0% to 59% = F

ASSESSMENT OF STUDENT GAIN

The purpose of assessing student learning at Neosho County Community College is to ensure the educational purposes of the institution are met and appropriate changes are made in program development and classroom instruction to allow for student success.

Pre-assessment ideally begins during the advisement and enrollment process prior to the beginning of the course where the advisor and student determine through the interview process the level of placement for the student. During the period of the first two weeks of a normal semester, each student will be observed and/or interviewed and initial papers produced will be examined to determine needed competency development throughout the course. Post-assessment to determine gain in competency will be measured at the end of each unit of study.

Attendance Policy

1. NCCC values interactive learning which promotes student engagement in the learning process. To be actively engaged, the student must be present in the learning environment.
2. Unless students are participating in a school activity or are excused by the instructor, they are expected to attend class. If a student's absences exceed one-eighth of the total course duration, (which equates to one hundred (100) minutes per credit hour in a face-to-face class) the instructor has the right, but is not required, to withdraw a student from the course. Once the student has been dropped for excessive absences, the registrar's office will send a letter to the student, stating that he or she has been dropped. A student may petition the chief academic officer for reinstatement by submitting a letter stating valid reasons for the absences within one week of the registrar's notification. If the student is reinstated into the class, the instructor and the registrar will be notified. Please refer to the Student Handbook/Academic Policies for more information
3. Absences that occur due to students participating in official college activities are excused except in those cases where outside bodies, such as the State Board of Nursing, have requirements for

minimum class minutes for each student. Students who are excused will be given reasonable opportunity to make up any missed work or receive substitute assignments from the instructor and should not be penalized for the absence. Proper procedure should be followed in notifying faculty in advance of the student's planned participation in the event. Ultimately it is the student's responsibility to notify the instructor in advance of the planned absence.

ACADEMIC INTEGRITY

NCCC expects every student to demonstrate ethical behavior with regard to academic pursuits. Academic integrity in coursework is a specific requirement. Definitions, examples, and possible consequences for violations of Academic Integrity, as well as the appeals process, can be found in the College Catalog, Student Handbook, and/or Code of Student Conduct and Discipline.

ELECTRONIC DEVICE POLICY

Student cell phones and other personal electronic devices not being used for class activities must not be accessed during class times unless the instructor chooses to waive this policy.

NOTE

Information and statements in this document are subject to change at the discretion of NCCC. Students will be notified of changes and where to find the most current approved documents.

ACCOMMODATIONS

If you are a student with a disability who may need accommodation(s), in compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990, please notify the Dean of Student Services in the Student Services Office, Sanders Hall, 620-432-0304, on the Chanute Campus, or the Dean for the Ottawa and Online Campuses, 785-248-2798, on the Ottawa Campus as soon as possible. You will need to bring your documentation for review in order to determine reasonable accommodations, and then we can assist you in arranging any necessary accommodations.

NON-DISCRIMINATION POLICY

The following link provides information related to the non-discrimination policy of NCCC, including persons with disabilities. Students are urged to review this policy.

<http://www.neosho.edu/Departments/NonDiscrimination.aspx>

SEXUAL MISCONDUCT POLICY (TITLE IX)

At NCCC, it is the responsibility of an instructor to help create a safe learning environment in the classroom, including both physical and virtual classrooms. All instructors are considered mandatory reporters at NCCC, therefore any information regarding sexual misconduct that is shared by a student in one-on-one meetings with the instructor must be reported to appropriate personnel at the College. Instructors will keep the information private to the greatest extent possible, but it is not confidential. Generally, climate surveys, classroom writing assignments or discussions, human subjects research, or events such as Take Back the Night events do not provide notice that must be reported to the Coordinator by employees, unless the reporting party clearly indicates that they wish a report to be made.

The following link provides information related to the sexual misconduct policy of NCCC, including resources, reporting options, and student rights. Students are urged to review this policy.

<http://www.neosho.edu/TitleIX.aspx>

COURSE NOTES